

REMARKS

Claims 1-2 and 14-15 stand rejected under 35 U.S.C. 103(a) as unpatentable over Carus '268 in view of Shapiro and in further view of Matsubayashi. A *prima facie* case of obviousness has not been established by the examiner. The examiner takes references from disparate fields with different objectives and combines aspects of these disparate references motivated solely by the teachings of Applicant. This use of hindsight reconstruction in the absence of motivation at the time of Applicant's invention makes out an improper rejection.

Whereas Applicant's invention is directed to a method for segmenting compound words in an unrestricted natural-language input, Shapiro is directed to a search engine and related algorithms for conducting searches. The importance of a word in a search for desired pages on the internet depends upon in how many pages or documents that word appears and the frequency of use of the term. These frequencies are used to calculate an importance weight for conducting a web-based search in Shapiro. An ordered list of the search terms according to their importance calculation is made by Shapiro and used in performing the search. Shapiro weights words in a search to evaluate the relative importance. The use of weights to evaluate where to segment a compound word is neither disclosed, contemplated nor suggested in Shapiro. Nothing discussed herein has been shown to have any relation to a method for segmenting compound words in an unrestricted natural-language input.

In Applicant's invention, breakpoints are assigned weights and the natural-language input is traversed in an order determined by the weights in order to then identify linkable components. In contrast, Carus '268 does not assign weights to breakpoints nor does it disclose using weights to determine an order for traversing substrings. Carus '268 gets right down to the task of identifying linkable components. Each transition, according to Carus '268, is identified as a link, a breakpoint or an unknown. (col. 5, l. 62-65). Carus '268 describes using a sliding window in an orderly manner sliding the window along the text as statistical analysis is conducted. The statistical analysis in Carus '268 either finds a breakpoint or does not. There is no disclosure, suggestion or teaching of the assignment of weights to the transitions. All unknown transitions are

equally identified as simply unknown. Applicant's invention which includes the assignment of weights and the use of those weights in traversing substrings is neither taught, disclosed nor suggested by Carus '268.

The examiner cites Matsubayashi for its disclosed use of probabilities. Matsubayashi provides head position probabilities and tail position probabilities for characters. These two probabilities for adjacent characters produces a division probability. "When the value of a calculated division probability exceeds a predetermined value (which will be referred to as a division threshold, hereafter), the system performs division of the single character type string thereat." (Matsubayashi, col. 3, l. 55-59).

Applicant finds no suggestion in Matsubayashi of the use of probabilities for providing an order in which substrings are traversed while seeking to identify linkable components. Rather, Matsubayashi uses the calculations to divide up a character string to extract smaller strings for document searching. The frequency of occurrence of the extracted strings in documents in the databases is used in conducting the search to identify relevant documents. Applicant finds no suggestion within the references to make use of probabilities as taught by Matsubayashi in the manner claimed and taught by Applicant.

The examiner's statement in support of combining Carus '268 with Shapiro is as follows. "Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Carus' method wherein it is described as above, to tell the user which words are considered the most important in the search." (Office Action, page 4). But there is no search. With all due respect, the use of words "in the search" has no relation to the disclosure of Carus '268. Carus '268 relates to breaking words in a stream of text. While Shapiro relates to conducting searches, Carus '268 relates to analyzing language. The examiner points to no indication in Carus '268 that a user would wish to take advantage of any algorithms used for conducting searches as taught by Shapiro. The examiner uses the term "search" and "Carus" in the same sentence and yet a relationship between the Carus '268 disclosure and searching for web pages is nowhere found within the cited references. There is thus no basis for combining Carus '268 and Shapiro.

Again with respect to Matsubayashi, the examiner seeks to impose goals of searching for relevant documents on Carus '268. Applicant's invention relates to language analysis and more specifically segmentation of compound words. The examiner has provided no suggestion or teaching in the prior art that would motivate those working on segmentation of compound words to apply document searching algorithms. Moreover, the examiner provides no showing of how one of ordinary skill in the art would make use of these disparate teachings to come up with a method for segmenting compound words. The motivations suggested by the examiner all relate to searching for documents. There is no *prima facie* showing of how search strategies would lead to a method for segmenting compound words. Applicant respectfully submits that there has not been shown any suggestion or motivation in the art to combine the teachings of Carus '268 with any of Shapiro or Matsubayashi. Nor has there been any showing as to how one of ordinary skill in the art would know how to pick and choose from the teachings in these references and make a combination for use in segmenting compound words. For these reasons, it is not proper to combine these three cited references in the hindsight manner applied by the examiner. For these reasons, the rejection of claims 1-2 and 14-15 should be retracted and the claims allowed.

Moreover, none of the references Carus, Shapiro nor Matsubayashi disclose traversing substrings in an order determined by the weights assigned to the breakpoints. The examiner concedes Carus lacks this feature. Shapiro orders search terms by weights but does not disclose or suggest traversing substrings as claimed. Indeed, Shapiro does not assign weights to breakpoints. The breaks are predetermined by spaces or commas or other punctuation. Also, Matsubayashi does not disclose or suggest modifying the order of traversal based on breakpoint weights. Given that the limitation is absent from all three references, for this additional reason claims 1-2 and 14-15 should be allowed.

More particularly with respect to claim 14, Applicant notes that the examiner mistakenly recites "Carcus" and cites instead from paragraphs of Shapiro. Applicant assumes that the examiner intended to recite Shapiro rather than Carcus. Indeed, Carus '268 does not disclose assigning weights. Shapiro deals with words for use in a search. Shapiro does not discuss or suggest using weights to segment a word. Thus, breakpoints is not a consideration for Shapiro. Indeed Shapiro receives words already separated by

spaces or commas. Shapiro does not assign weights to breakpoints. Therefore, there is no showing that any of the cited references disclose “combining weights of context of one length that precede each breakpoint and a context of a different length that follow the breakpoint to assign a weight to the breakpoint in the natural-language input.” For this additional reason, claim 14 should be allowed.

Likewise as with respect to claim 14, claim 15 recites “weighting weights of a plurality of contexts of different lengths that precede and follow each breakpoint to assign a weight to the breakpoint in the natural-language input.” Shapiro does not teach methods with respect to breakpoints in natural-language. For the reasons recited above and further in view of this additional limitation in claim 15, claim 15 should be allowed.

For all of the foregoing reasons, Applicant submits that all claims presently in the application are allowable over the art of record and early notice to that effect is respectfully solicited.

Respectfully submitted,

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